FI0AJ-C

INTERFERENCE ANALYZER/RECEIVER (10 kHz to 30 MHz)

1. GENERAL. This procurement requires a portable, solid state interference analyzer/receiver with synthesized local oscillator capable of detecting RF signals over the frequency range of 10 kHz to 30 MHz.

2. CLASSIFICATION. The equipment shall meet the requirements of MIL-T-28800, Type III, Class 5, Style E, Color R for Navy shipboard, submarine, and shore applications with the following modifications and exceptions:

a. The nonoperating temperature requirement is limited to the range of -25°C to +70°C without batteries, -10°C to +60°C with batteries.

b. The relative humidity requirement is limited to 95% noncondensating.

c. The operating and nonoperating altitude requirements are not invoked.

d. The electromagnetic interference requirements of MIL-T-28800 are limited to CE01, CE03, CS01, CS02 (0.05 to 100 MHz), CS06, RE01 (back panel search excluded), RE02 (14 kHz to 1 GHz), and RS03.

e. The warm-up time is extended to 30 minutes.

3. OPERATIONAL REQUIREMENTS. This equipment shall be capable of demodulating AM, FM, and pulse modulated signals over its measurement frequency range.

3.1 Frequency characteristics.

3.1.1 Range. 10 kHz to 30 MHz.

3.1.2 Display. Digital (5 digits minimum).

3.1.2.1 Resolution. At least 1 kHz.

3.1.3 Resolvable frequency. At least 100 Hz.

3.1.4 Accuracy.

3.1.4.1 Internal reference. $\pm 2 \times 10^{-5}$ +50 Hz (max error ±650 Hz at 30 MHz).

3.1.4.2 External reference. Dependent on stability of external reference.

3.1.4.2.1 Input. 5/10 MHz, 1 Vrms into 50Ω.

3.2 Level measurement.

3.2.1 Dynamic range. At least 135 dB.

3.2.1.1 Maximum input. At least 110 dBμV (3 dBm).

3.2.2 Display. Digital and/or analog in units of at least dBμV.
3.2.2.1 Resolution. Minimum resolution of at least 1 dB over entire level range.

3.2.3 Accuracy. ±1.5 dB of actual level (average value measurement of signals > 0 dBμV).

3.2.4 IF bandwidths (at least).

3.2.4.1 Minimum. 200 Hz.
3.2.4.2 Maximum. 9 kHz.

3.2.5 Sensitivity (CW signal) S+N/N = 3 dB. At least -20 dBμV.

3.2.6 Input impedance. 50Ω.

3.2.6.1 VSWR. Less than 1.5:1 for levels < 100 dBμV.

3.2.6.2 Connector. BNC (female).

3.2.7 Calibration. IF gain adjusted to stored, nonvolatile correction factors when CAL is activated.

3.2.8 Detector functions. Average, peak, peak with programmable hold.

3.3 Extraneous signals.

3.3.1 Local oscillator emission. Less than 25 dBμV with input connector terminated in 50Ω.

3.3.2 IF rejection. > 80 dB.

3.3.3 Image rejection. > 70 dB.

3.3.4 Cross-modulation. A 100 dBμV signal with 30% AM at 1 kHz spaced > 100 kHz away from a received signal of 20 dBμV shall produce less than 3% AM on the received signal.

3.4 Outputs.

3.4.1 Tracking generator.

3.4.1.1 Level. At least -30 dBm.

3.4.1.2 Frequency. Receiver's tuned frequency.

3.4.1.3 Output. 50-ohm, BNC female connector.

3.4.1.4 Accuracy. $\pm 2 \times 10^{-5}$ +50 Hz (max error ±650 Hz at 30 MHz).

3.4.2 Intermediate frequency (IF). For connection to oscilloscope.

3.4.3 AM. Demodulated amplitude modulation signal.
3.4.4 FM. Demodulated frequency modulation.

3.4.5 Recorder. At least 1 volt full scale; level proportional to detected signal.

4. GENERAL REQUIREMENTS.

4.1 Power Source. 115 and 230 Vac ±10%, 50, 60, or 400 Hz, 75 VA maximum

4.1.2 Direct current. 11 to 14V at 2A nominal or less.

4.2 Volume. The total volume shall not exceed 54,077 cm^3 (3,300 in^3).

4.3 Weight. The total weight including battery pack shall not exceed 22.7 kg (50 lb).

4.4 Calibration interval. The calibration interval shall be 12 months minimum. The equipment shall be within all accuracy requirements specified herein, with a 72% or greater confidence factor following a calibration interval of 12 months.

5. ACCESSORIES.

5.1 Rod antenna (9 kHz to 30 MHz)

5.2 Loop antenna (9 kHz to 30 MHz)

5.3 Tripod